Air Resources Board

Mary D. Nichols, Chairman
1001 I Street • P.O. Box 2815
Sacramento, California 95812 • www.arb.ca.gov

Matthew Rodriquez
Secretary for
Environmental Protection

Edmund G. Brown Jr.
Governor

May 8, 2014

Ms. Janet McCabe
Acting Assistant Administrator
Office of Air and Radiation
U.S. Environmental Protection Agency
Ariel Rios Building
1200 Pennsylvania Avenue, N.W.
Mail Code: 6101A
Washington, D.C. 20460

RE: Docket Number EPA-HQ-OAR-2013-0495 (Standards of Performance for Greenhouse Gas Emissions from New Stationary Sources: Electric Utility Generating Units)

Dear Acting Assistant Administrator McCabe:

The California Air Resources Board (ARB) would like to thank you for the opportunity to provide comments on the proposed Standards of Performance for Greenhouse Gas Emissions from New Stationary Sources: Electric Utility Generating Units (proposed regulation).[1]

The most recent report from the Intergovernmental Panel on Climate Change shows that global emissions of greenhouse gases (GHG) continue to rise despite a growing number of policies to address climate change. Strong carbon pollution standards for new and existing power plants are urgently needed to prevent the worst impacts of climate change. As the President's Climate Action Plan recognizes, electric utility generating units (EGUs) are the largest stationary source of GHG in the country, and so require swift regulatory attention. The Clean Air Act gives the United States Environmental Protection Agency (EPA or agency) responsibility for setting national pollution standards for these sources, which is an important step in moving us towards reducing GHG emissions. Your efforts to adopt an effective regulation reducing the carbon impact of these units will continue the progress made by EPA and ARB as we work together to reduce overall emissions.

[1] *See* 79 Fed. Reg. 1430 (Jan. 8, 2014).

ARB recognizes that EPA will face significant challenges as it works to finalize the proposed regulation. In particular, ARB recognizes the challenges inherent in developing a standard that will drive continuing pollution reductions across the varying energy resources and operational needs of electricity grids across the nation. The carbon standards for new EGUs should be considered within the context of the larger need to lower the carbon intensity of the power sector as a whole, as the climate science tells us we must do. Within the context of this rulemaking, decarbonizing the whole power grid, rather than simply cleaning up individual EGUs that operate within the system, remains essential to securing a stable climate.

Though EPA has proposed an achievable standard for new baseload EGUs, we strongly urge the agency to secure more focused and durable emissions reductions by continuing to investigate EGU performance characteristics, and how those characteristics may shift in the regulated future, subcategorizing appropriately to reflect the resulting range of operational modes. Although ARB does not support further delay in finalizing carbon pollution standards, we trust that EPA will carefully examine the record before it, and collect additional data if necessary, in order to finalize the strongest standards possible. EPA should conduct further reviews and rulemakings as necessary, even after finalizing standards on its current timeline, in order to continue to adapt the standards to ensure that any new EGUs are operated as efficiently as possible within the context of ever-evolving, lower carbon energy systems.

ARB worked closely with the California Energy Commission, the California Public Utilities Commission, and the California Independent System Operator to develop these suggested revisions to the proposed regulation informed by California's experience with the electricity sector, and our own long term climate goals. Our comments are primarily focused on the proposed carbon standards for natural gas-fired EGUs.

1. <u>The proposed CO_2 emission limitations are feasible for new stationary combustion turbines used *for baseload generation* (79 Fed. Reg. 1,447 *et seq.*), but EPA needs to recognize operational differences between EGUs serving different functions</u>

The proposed regulation subcategorizes EGUs into large units (turbines with a heat input rating greater than 850 MMBtu/hr) and small units (turbines with a heat input rating less than or equal to 850 MMBtu/hr). EPA is proposing emission standards of 1,000 lb CO_2/MWh for large units, and 1100 lb CO_2/MWh for small units (both on a gross output basis).

We agree with EPA that these standards will be achievable for new EGUs constructed to provide baseload power. Indeed, the vast majority of EGUs available now, when used as baseload generation, can meet or even be cleaner than the proposed standard as EPA has demonstrated in the record for the previous proposed rule.[2]

However, these size-based standards do not fully acknowledge the changes now occurring in the power sector, which may lead to shifts in how natural gas-fired EGUs are operated. This regulatory challenge is particularly acute with regard to regulating these EGUs because the role of these units is shifting substantially in states like California. These units are increasingly operated to support and integrate growing levels of renewable resources, such as solar and wind, rather than solely as baseload power or peaking resources. Accordingly, EPA should carefully consider how its standards will interact with a changing power grid to ensure that the standards support this renewable integration, while continuing to set rigorous standards for EGUs that continue to operate in more traditional applications.

Differentiating units by the role they play within a regional power mix, rather than by size alone, would be one way to address this dilemma. ARB strongly urges EPA to consider further subcategorization based on an EGU's operational profile (including, for instance, baseload, conventional load-following, fast-starting/ramping, and peaking) in order to ensure the developed standards support further renewable integration. This approach would allow strong emissions standards to be tailored to the actual role natural gas units play in system-wide GHG emission reduction efforts, which is our long-term goal.

California's recent experience may be informative, showing how the changing role of EGUs has affected the overall efficiency of units. Some combined cycle EGUs that came on line in the last ten years have been designed to be efficient load-following units. They are part of a transition that uses a combination of hydropower, older steam boilers and new flexible units to integrate the first waves of variable renewables. As California has rapidly added variable renewable generators as part of its plan to de-carbonize the electricity sector, the incremental need for flexibility, which is critical for maintaining grid reliability, has also increased.

In California, more than 7,000 MW of central-station and distributed solar capacity now serves California loads.[3] Another 5,000 MW of variable output central-station renewable capacity has been contracted for by the state's investor-owned-utilities and is

[2] EPA-HQ-OAR-2011-0660-0030 Attachment 2010 New Combined Cycle Data: http://www.regulations.gov/#!documentDetail;D=EPA-HQ-OAR-2011-0660-0030

[3] California ISO, California Solar Initiative data

expected to come on line within the next three years.[4] Another 3,000 MW or more of new distributed generation, mostly solar, is forecasted through 2020.[5] Integration of these variable output resources requires a thermal generation fleet that is both flexible enough to sit idle or at a very low output to allow absorption of the solar energy generated at midday, and quickly contribute up to 13,000 MW of firm, dispatchable resources between 4:00 and 8:00 PM, as the sun sets and peak evening demand occurs.[6]

Flexible EGUs with the ability to cycle and ramp as described above will have different emissions profiles compared to EGUs that are operated as either baseload or peaker units. Frequent cycling and ramping will decrease thermal efficiency and increase GHG emissions per MWh compared to units providing baseload energy. Even when the flexible resource is operated at a full steady state, the very engineering design that enables the flexible operation may also reduce thermal efficiency. Newer EGU projects include multiple modules that allow incremental dispatch of the modules, each able to start and shut down quickly once or more often each day and rapidly ramp up and down. Existing units are being similarly dispatched, demonstrating the increasing need for flexibility while maintaining grid reliability as California de-carbonizes the electricity sector with greater amounts of variable renewable resources.

This new and emerging demand for flexible resources heralds the increasing importance of electricity supply with significantly different emission characteristics compared to traditional baseload resources. EPA should recognize these changes and provide regulation in a deliberate and targeted manner, to ensure the proposed standards drive emissions reductions for EGUs of all operating types and do not undermine the ability of resources to meet this new demand that will support significant reductions from the electricity sector.

ARB and the California energy agencies have begun modeling exercises to better understand the degree of grid operational flexibility that will be needed for renewables integration. As this information becomes available, we will share this information with you.

1. <u>EPA should move to regulate low capacity factor combustion units as quickly as possible, rather than exempting any units.</u>

[4] California Public Utilities Commission, Renewable Portfolio Standard Project Status Table, February 2014
[5] California Energy Demand 2014 – 2024, California Energy Commission, Form1-4, Statewide Peak Demand 2014-2024 Baseline Forecast
[6] California ISO estimate of potential 3-hour ramp in December 2016, presented at the California Public Utilities Commission Resource Adequacy workshop, March 20, 2013

EPA is proposing an exemption for units with a capacity factor of less than 33 percent, based on a retrospective three year rolling average of operating hours. ARB believes that EPA should not provide an exemption for these types of units at all, as such an exemption would not require any standards from what may be a significant body of new emissions sources. Comprehensive new source greenhouse gas standards for all EGUs, regardless of operational type, are an important step towards fulfilling the President's mandate to employ EPA's Clean Air Act authority fully, and will provide the strongest foundation for pending regulations for existing plants.

The exemption approach is unlikely to serve these purposes, especially in the context of resources used for renewables integration, to the extent they operate below any "exempt" threshold. EPA should, instead, use the subcategorization approach we discuss above to develop distinct standards for plants operating at low capacity factors. Rather than formally exempting any units in its regulations, it should narrowly define the group of units not covered by the first round of standards, and then swiftly proceed to propose and finalize appropriate standards for them, ideally for finalization as part of the larger regulatory package. ARB will be happy to work with EPA to provide data supporting this effort.

2. <u>If EPA retains an exemption, determining the applicability of that exemption should be done in the initial permitting stage. (79 Fed. Reg. at 1461)</u>

In its proposal for allowing an exemption of facilities with less than 33 percent capacity factor, EPA proposes this threshold be determined based on a 3-year rolling average of the unit's operating history after permitting. As previously stated, ARB does not agree with the proposal for any exemption, and instead urges EPA to develop standards tailored to the operational characteristics of EGUs, including flexible generation. However, should EPA include an exemption, ARB believes retrospective determination of any rule requirement applicability, including exemption, would result in compliance issues and in difficulties in determining proper permitting requirements.

ARB instead recommends that EPA require applicants to determine which operational category they will be subject to, including corresponding emissions limits, at the initial application stage of permitting, followed by ongoing verification. A determination at the initial permitting stage is critical for clearly determining the applicability of requirements such as the quantity of offsets (for criteria pollutants) which may be needed, and the environmental impacts of the project, as well as for writing clear and enforceable permit terms. A determination of regulatory requirements at the initial permitting stages is consistent with current permitting practices in many jurisdictions, including California.

Conclusion

In closing, ARB recognizes that EPA needs to finalize the proposed regulation by June of 2015 (when existing source guidelines must also be finalized). We urge you to consider our recommendations carefully as we believe they will provide much needed flexibility and ensure long-term emission reductions. We are available to assist in gathering additional information, or support supplementary administrative actions necessary to achieve the strongest standards possible.

Thank you again for the opportunity to provide input on the proposed regulation. We look forward to continued partnership and progress in reducing greenhouse gas emissions. If you have any questions, please contact me at (916) 322-5840, or Mr. Richard W. Corey, Executive Officer, at (916) 322-7077.

Sincerely,

/s/

Mary D. Nichols
Chairman

cc: Mr. Christian Fellner
Energy Strategies Group
Sector Policies and Programs Division (D243-01)
U.S. Environmental Protection Agency
Research Triangle Park, North Carolina 27711

Ms. Elizabeth Adams
Deputy Director
Air Division, Region 9
U.S. Environmental Protection Agency
75 Hawthorne Street
Mail Code: AIR-1
San Francisco, California 94105

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cc: (continued)

EPA Docket Center (2 copies)
U.S. Environmental Protection Agency
Attn: Docket ID No. EPA-HQ-OAR-2013-0495
Mail Code 2822T
1200 Pennsylvania Ave. NW.
Washington, D.C. 20460

Mr. Robert Oglesby
Executive Director
California Energy Commission
1516 Ninth Street, MS-29
Sacramento, California 95814-5512

Mr. Michael Peevey, President
California Public Utility Commission
505 Van Ness Avenue
San Francisco, California 94102

Mr. Dennis Peters, Manager
California Independent System Operator
250 Outcropping Way
Folsom, California 95630

Mr. Brian Turner
Deputy Executive Director
California Public Utilities Commission
505 Van Ness Avenue
San Francisco, California 94102

Dr. Robert Weisenmiller, Chair
California Energy Commission
1516 Ninth Street, MS-29
Sacramento, California 95814-5512

Mr. Richard W. Corey
Executive Officer